

## **THE COST MODEL QUESTIONNAIRE**

The Parametric Estimating and Programming (PEP) effort towards funding authorization must be based upon an accurately developed project scope. The Cost Model Questionnaire serves as a checklist for the identification of project components (CES systems). The project scope is a summation of the applicable systems. Project unique features may require non-typical systems or affect the cost of typical systems. This data should be noted by the preparer.

Pricing of the stated scope, by systems, requires pricing criteria for each system. The questionnaire requests that minimum pricing criteria for each system be entered. The data entered should be considered, at that time, to be the most probable pricing criteria. Emphasize scope features that are uncommon or high cost. This questionnaire, coordinated by the A&E and completed by the activity, must be reviewed by the design team prior to initial scoping meetings. This effort will generate early collection of information by the activity and will be a basis for the A&E prepared questionnaires. Questionnaires for A&E submittals to LANTDIV should define scope and support the estimate.

## CES STANDARD SYSTEMS LIST

Interior. The interior systems are shown in the following list.

- 0XX General
- 000 Building Construction
- 00X Overhead
  - 001 Field Overhead
  - 002 Home Office OH
- 01X Additive Bid Items
- 02X Deductive Bid Items
- 03X Base Bids
- 04X Government Cost
  - 041 OMSI
  - 042 PCAS
  - 043 Contingencies
  - 044 SIOH
- 1XX General Construction
- 11X Structural
  - 111 Foundation (SF)
  - 112 Slab on Grade (SF)
  - 113 Structural (SF)
  - 114 Supported Floor (SF)
  - 115 Stairs (EA)
  - 116 Roof Structure (SF)
  - 117 Pre-Engineered Building (SF)
  - 118 Vault (SF)
  - 119 Write-in
- 13X Structural Write-in
- 14X Architectural
  - 141 Roofing (SF)
  - 142 Exterior Walls (SF)
  - 143 Interior Walls (SF)
  - 144 Interior Finishes (SF)
  - 145 Doors (SF)
  - 146 Windows (SF)
  - 147 Specialties (SF)
  - 148 BEQ Wardrobes (EA)
  - 149 Write-in
- 16X Architectural Write-in
- 17X Demolition Interior
  - 171 Demo Interior (SF)
  - 172 Asbestos Removal Interior (LS)
  - 173 - 175 Write-in
- 2XX Interior Mechanical
- 21X Plumbing Domestic
  - 211 Plumbing, Domestic (EA)
  - 212 Domestic Hot Water Solar (HBTU)
  - 213 Roof Drainage (EA)
  - 214 - 216 Write-in
- 22X Space Conditioning
  - 221 HVAC (MBTU/TNS)
  - 222 Air Conditioning (TNS)
  - 223 Heating, Ventilation (MBTU/CFM)
  - 224 Mechanical Ventilation (CFM)
  - 225 Dehumidification (PPH)
  - 226 Heating Solar (SF)
  - 227 Write-in
- 23X Weight Handling Equipment
  - 231 Bridge Cranes (TNS) (1)
  - 232 Monorails (TNS) (1)
  - 233 Fixed Hoist (TNS) (1)
  - 234 Vehicle Lifts (TNS) (1)
  - 235 Elevators (TNS) (1)
  - 236 Escalators (TNS) (1)
  - 237 Conveyors (TNS) (1)
  - 238 Write-in
- 24X Special Mechanical Piping System
  - 241 Vacuum (CFW) (1)
  - 242 Oxygen (EA) (1)
  - 243 Nitrogen (EA) (1)
  - 244 Compressed Air (CFM) (1)
  - 245 Interior Steam (PPH) (1)
  - 246 - 247 Write-in
- 25X Special Mechanical, Other
  - 251 Dust Collection (CFM) (1)
  - 252 Engine Exhaust (CFM) (1)
  - 253 - 255 Write-in
- 27X Interior Fire Protection
  - 271 Sprinklers (SF)
  - 272 AFFF (SF)
  - 273 Carbon Dioxide (LBS)
  - 274 Halon (LBS)
  - 275 Fire Alarm (SF)
  - 276 - 277 Write-in
- (1) Built-in Equipment
- 3XX Interior Electrical
- 31X Power & Lighting
  - 311 Power (KW)
  - 312 Lighting (SF)

313 400HZ (KW) (1)  
 314 Direct Current (KW) (1)  
 315 UPS (KVA)(1)  
 316 Electrical Generators (KW) (1)  
 317 - 318 Write-in  
 32X Special Equipment Protection  
 321 Grounding (SF) (1)  
 322 Lightning Protection (SF) (1)  
 323 - 326 Write-in  
 33X Special Electrical Electronics  
 331 Security Detection  
 332 EMCS (EA) (1)  
 333 Computer Communication  
 334 - 336 Write-in  
 34X Communication  
 341 Telephone (SF)  
 342 Intercom (SF)  
 343 Television (SF)  
 344 Public Announcement (SF)  
 345 Master Clock (EA)  
 346 - 347 Write-in  
 35X Write-in  
  
 4XX Special Equipment  
 41X Medical Equipment  
 411 Hospital Equip (SF) (1)  
 412 Dental Equip (EA) (1)  
 413 - 414 Write-in  
 415 Install Gov't Furnished Medical Equip  
 416 Gov't Furn Med Equip  
 42X Food Service Equipment  
 421 Food Service Equip (SF)  
 422 - 424 Write-in  
 425 Install Gov't Furnished Food Service Equip  
 426 Gov't Furnished Food Service Equip  
 43X Miscellaneous Equipment  
 431 Chapel Equip (SF) (1)  
 432 Movie Theater Equip (SF) (1)  
 433 Rifle Range Equip (EA) (1)  
 434 Lab Equip (EA) (1)  
 435 Install Gov't Furnished Lab Equip  
 436 Gov't Furnished Lab Equip  
 437 Waste Disposal (PPH) (1)  
 438 Write-in  
 44X Special Warehouse Equipment  
 441 Special Warehouse Equip (SF) (1)  
 442 - 444 Write-in  
 445 Install Gov't Furnished Warehouse Equip  
 446 Gov't Furnished Warehouse Equip

45X Special Construction  
 451 Hangar Doors (SF)  
 452 Vault Doors (EA)  
 453 Blast Doors (SF)  
 454 Raised Floor (SF)\*  
 455 Radio Frequency Shielding (SF) (1)  
 456 Bowling Lanes (EA)  
 457 Paint Spray Booth (SF) (1)  
 458 Write-in  
 49X Other Equipment  
 491 Other Miscellaneous Equip  
 492 Snow Melting (SF)  
 495 Install Other Gov't Furnished Equip  
 496 Other Gov't Furnished Equip (SF) (1)  
 499 Building Work Not Included Elsewhere (LS)

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 (1) Built-in Equipment  
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\* Considered built-in equipment for category code 610-20  
 (Data Processing  
 Center) only

5XX Exterior Utilities  
 51X Exterior Electrical  
 511 Electrical Distribution Primary (LF)  
 512 Electrical Distribution Secondary (LF)  
 513 Substation/Transformer (KVA)  
 514 Area lighting (EA)  
 515 Airfield Lighting (LF)  
 516 Lightning Protection (EA)  
 517 - 518 Write-in  
 52X Exterior Communication  
 521 Fire Alarm (LF)  
 522 Security Alarm (LF)  
 523 Communication, Phone (LF)  
 524 Exterior EMCS (LF)  
 525 - 526 Write-in  
 54X Exterior Mechanical  
 541 Heat Distribution Overhead (LF)  
 542 Heat Distribution Underground (LF)  
 543 Chilled Water Dist (LF)  
 544 Condensate Collect (LF)  
 545 Gas Distribution (LF) \*  
 546 Compressed Air Dist (LF)  
 547 Fuel Distribution (LF)  
 548 Exterior Foam (LF)  
 549 Write-in

55X <u>Exterior Mechanical</u>	663 - 666 Write-in
551 Water Distribution (LF)	
552 Fire Protection Water Distribution (LF)	7XX <u>Paving</u>
553 Salt Water Distribution (LF)	71X <u>Roads</u>
554 Sanitary Sewers (LFI)	711 Concrete Roads (SY)
555 - 556 Write-in	712 Flexible Roads (SY)
56X <u>Bulk Storage</u>	713 Overlay Roads (SY)
561 Fuel Storage Bulk (BBL)	714 Surface Treatment (SY)
562 Fuel Storage Ready Issue (GAL)	715 Slurry Seal (SY)
563 Water Storage (GAL)	716 - 717 Write-in
564 - 566 Write-in	72X <u>Parking</u>
57X <u>Fueling</u>	722 Flexible (SY)
571 Vehicle Fueling (EA)	723 Overlay (SY)
572 Aircraft Fueling (EA)	724 Surface Treatment (SF)
573 Marine Fueling (EA)	725 Slurry Seal (SY)
574 - 576 Write-in	726 - 727 Write-in
58X <u>Pumping</u>	73X <u>Write-in</u>
581 Fuel Pumping Station (GPM)	
582 Water Pumping Station (GPM)	
583 Fire Booster Pump (GPM)	74X <u>Walks</u>
584 Sewage Pump Station (GPM)	741 Concrete Walks (SY)
585 Sewage Lift Station (GPM)	742 Bituminous Walks (SY)
586 Write-in	743 Special Walks (SY)
59X <u>Treatment Facility</u>	744 - 746 Write-in
591 Water Treatment (MGD)	75X <u>Aircraft Paving Concrete</u>
592 Domestic Sewage (MGD)	751 Runways (SY)
593 Industrial Waste (MGD)	752 Taxiways (SY)
594 - 596 Write-in	753 Aprons (SY)
	754 Repairs Paving (SY) .
6XX <u>Exterior Structures</u>	755 Crack and Joint Repairs (LF)
61X <u>Equipment Building</u>	756 - 757 Write-in
611 Mechanical Equip Building (SF)	76X <u>Aircraft Pavement Flexible</u>
612 Electrical Equip Building (SF)	761 Flexible Runways (SY)
613 - 615 Write-in	762 Flexible Taxiways (SY)
62X <u>Supporting Structures Miscellaneous</u>	763 Flexible Aprons (SY)
621 Security Gate (LF)	764 Repair A/C Flexible Paving (SY)
622 Guard House (SF)	765 AC Paving Overlay (SY)
623 - 625 Write-in	766 AC Paving Slurry Seal (SY)
64X <u>Pollution Abatement Structures</u>	767 - 768 Write-in
641 Oil Water Separators (GAL)	77X <u>Incidental Paving Work</u>
642 Electrostatic Precipitator (SCFW)	771 Pavement Milling (SY)
643 - 645 Write-in	772 - 776 Write-in
65X <u>Shop Support Structures</u>	
651 Vehicle Grease Racks (EA)	8XX <u>Site Preparation</u>
652 Vehicle Wash Platforms (EA)	81X <u>Earthwork</u>
653 - 656 Write-in	811 Earthwork (CY)
66X <u>AC Cleaning Facility</u>	812 Borrow (CY)
661 AC Washing Facility (SY)	813 Topsoil/Seed/Sod (SY)
662 AC Rinsing Facility (SY)	814 Landscaping (SY)

- 815 Site Irrigation (EA) .
- 816 Surcharge (CY)
- 817 Earth Replacement (CY)
- 818 Environmental Protection (AC)
- 819 Write-in
- 82X Site Improvements
  - 821 Site Improvements (SY)
  - 822 - 825 Write-in
- 83X Site Preparation Miscellaneous
  - 831 Site Dewatering (Major) (LF)
  - 832 - 835 Write-in
- 84X Demolition
  - 842 Remove Paving and Slabs (SY)
  - 843 Remove Structures (CF)
  - 844 Remove/Dispose of Asbestos (Exterior) (LS)
  - 845 Remove/Dispose of P.C.B. (LS)
  - 846 Remove/Dispose of Contaminated Earth (CY)
  - 847 Write-in
- 85X Storm Drainage
  - 851 Storm Drainage Piping (LF)
  - 852 Box Arch Culvert (LF)
  - 853 Drainage Facing
- 854 - 856 Write-in
- 86X Fencing
  - 861 Fencing (Perimeter) (LF)
  - 862 Fencing Alarm (LF)
  - 863 - 865 Write-in
- 87X Recreation Equipment/Fields
  - 871 Playground Equip (EA)
  - 872 Playing Field Equip (EA)
  - 873 Tennis Courts (EA)
  - 874 Softball/Baseball (EA)
  - 875 Football/Soccer (EA)
  - 876 - 877 Write-in
- 9XX Heavy Construction
- 91X Special Building Foundations
  - 911 Piling - Land (LF)
  - 912 Caissons (EA)
  - 913 Pressure Injected Footings (EA)
- 914 Vibrofloatation (EA)
- 915 Chemical Soil Stabilization (EA)
- 916 Dynamic Consolidation (EA)
- 917 Piling Cast-in-Place (LF)
- 92X Railroad
  - 921 Track Work Railroad (LF)
  - 922 - 925 Write-in
- 93X Marine Structures Piers
  - 931 Piling-Marine (LF)
  - 932 Dolphins (EA)
  - 933 Med Mooring (LS)
  - 934 Pier Deck (SF)
  - 935 Fenders (LF)
  - 936 Pile Clusters (EA)
  - 937 Marine Specialties (LS)
  - 938 Write-in
- 94X Marine Structures Special
  - 941 Bulkhead/Seawall (SF)
  - 942 Erosion Protection-Marine (SY)
  - 943 Riprap (Marine) (SY)
  - 944 - 946 Write-in
- 95X Marine Repairs (LS)
  - 951 Underdeck Repairs
  - 952 Pile Repair Marine (LF)
  - 953 - 957 Write-in
- 96X Dredging
  - 961 Mob/Demob Dredging (LS)
  - 962 Hydraulic Dredging (CY)
  - 963 Bucket Dredging (CY)
  - 964 - 966 Write-in
- 97X Towers/Antennas
  - 971 Towers (LF)
  - 972 Antennas (LS)
  - 973 - 976 Write-in
- 98X Tunnel/Pipe Jacking
  - 981 Tunneling (LS)
  - 982 Pipe Jacking (LF)
  - 983 - 986 Write-in
- 99X Heavy Construction Miscellaneous
  - 991 Bridges (SF)
  - 992 Overpasses (SF)
  - 999 Supporting Facilities

Project

Title\_\_\_\_\_

Location\_\_\_\_\_

\_\_\_\_\_

Contract

Number\_\_\_\_\_

P#\_\_\_\_\_ FY\_\_\_\_\_

Date\_\_\_\_\_

Completed

by\_\_\_\_\_

# COST ENGINEERING SYSTEM (CES)

## COST MODEL QUESTIONNAIRE

APRIL 1991

000 Building Construction

Gross Building Area (SF)\_\_\_\_\_

Function or Category Code	% or Area
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Where a single building includes areas of significant cost variation as identified by category code or functional area, shown a breakdown by function or category code. Show area in sq. ft. or by percentage to nearest 5%.

20	Number of Floors	_____ EA
21	Floor to Floor Height	_____ LF
22	Length - Nearest Foot	_____ LF
23	Width - Nearest Foot	_____ L F
25	Irregular - Yes/No	

26 Building Perimeter \_\_\_\_\_ LF

40 Describe any known special considerations; scheduling, security, asbestos removal, hazardous materials, etc.

50 Finish floor elevation above existing grade - nearest foot \_\_\_\_\_ LF

## CES STANDARD NARRATIVES

### 000 Building Construction Summary

Includes the total cost of all Systems 001 thru 499. Total building cost to the 5-foot line. This system is not to be used for estimate preparation.

### OVERHEAD

#### 001 Field Overhead                                      Total Cost                                      Lump Sum

Includes Project Manager, Superintendent, Timekeeper, Field Engineer, Clerical Staff, Field Offices, Utilities, Field Storage, and any other field incurred cost necessary to administer the project in the field. For projects outside the United States include shipping, transportation of personnel per diem and temporary housing.

#### 002 Home Office Overhead                                      Total Cost                                      Lump Sum

Includes the portion of Home office costs allocated to the project being priced.

#### 003 Contractor Quality Control                                      Total Cost                                      Lump Sum

Includes costs for the Field Contractor Quality Control Staff. Testing requirements are included with other systems as applicable.

#### \*011 Additive 1                                      Total Cost                                      Lump Sum

Includes all costs associated with Additive item 1 as described in the specifications. When an additive is a separate building or involves substantial work, it may be advisable to run a separate estimate to develop the cost and transfer only the total to the master estimate.

\*Typical for all Additive and Deductive items.

#### 041 OMSI                                      Total Cost                                      Lump Sum

Includes costs associated with preparation of an Operation and Maintenance Service Instruction.

#### 042 PCAS                                      Percent                                      Lump Sum

Includes costs associated with Post Contract Award Services.

#### 043 Contingencies                                      Percent                                      Lump Sum

Includes contingency allowance. The contingency entered is not an estimating contingency but a contingency for change orders.

#### 044 SIOH                                      Percent                                      Lump Sum

Includes an allowance for government administration of the construction contract: Supervision, Inspection, and Overhead.



## BUILDING SYSTEMS INTERIOR

### GENERAL CONSTRUCTION

#### 111 Foundation

Ground Floor \_\_\_\_\_ Sq. Ft.

Includes excavation and backfill for foundation and basement construction, pile caps, footings, grade beams, piers, foundation walls, basement walls, fill under floor slabs, and all required construction to the first floor elevation, excluding all structural floor slabs, ground slabs, basement structural framing, piling, special foundations and soil treatment. See 84X for removing unsuitable materials and 816 for surcharging.

	Footing Depth from Existing Grade	
__01 Spread Footings	__11	__21 Borrowfill 1"
__02 Thickened Slab	__12	__22 Borrowfill 2"
__03 Pile Foundation	__13	__23 Borrowfill 3"
__04 Caissons	__14	__24 Borrowfill 4"
__05 Continuous wall footing	__15	__25 Borrowfill 5"
__06 Grade Beams	__16	__26 Borrowfill over 5'

\*\*\*\*\* For convenience pilings are described with building foundation.  
\*\*\*\*\* Price under the supporting facilities.

#### 911 Land Piling-Driven

Length of Piling \_\_\_\_\_ Lin. Ft.

	Length of Piling
__02 Timber	__20 Under 25'
__03	__21 26' - 35'
__04 Concrete 10" Sq.	__22 36' - 45'
__05 Concrete 12" Sq.	__23 46' - 55'
__06 Concrete 14" Sq.	__24 56' - 65'
__07	__25 66' - 75'
__08 Steel	__26 76' - 85'
	__27 86' - 95'
	__28 Over 95'

#### 112 Slab on Grade

Slab on Grade \_\_\_\_\_ Sq. Ft.

Includes all ground slabs and vapor barrier, waterproofing, wire mesh, capillary fill, and soil treatment. Includes ground slab, reinforcing steel, waterproofing and soil treatment for structural slab placed on fill where fill is used as form. Borrow fill under slab is included in System 111.

	Thickness Floorload	
__01 Floating	__11 Under 6"	__30 Under 100 PSF
__02 Grade Beam Supported	__12 6"	__31 101-200 PSF

\_\_03 Pile Supported

\_\_13 8"

\_\_32 201-300 PSF

\_\_14 Over 8"

\_\_34 401-500 PSF

\_\_35 Over 501 PSF

### 113 Structural

Gross Bldg. Area \_\_\_\_Sq. Ft.

Includes structural frame consisting of; skeleton frame of building, i.e., columns, girders, cantilevered members extending beyond exterior walls, and fireproofing. Excludes framing in direct support of floor or roof construction.

\_\_01 Bearing Wall

\_\_10 Seismic Zone 0

\_\_32 Roofload 20 PSF

\_\_02 Steel Framing

\_\_11 Seismic Zone 1

\_\_33 Roofload 30 PSF

\_\_03 Concrete Cast-in-Place

\_\_12 Seismic Zone 2

\_\_34 Roofload 40 PSF

\_\_04 Wood

\_\_13 Seismic Zone 3

\_\_35 Roofload 50 PSF

\_\_05

\_\_14 Seismic Zone 4

\_\_36 Roofload 60 PSF

\_\_06 Concrete Precast

\_\_37 Roofload 70 PSF

\_\_07 Air Inflatable

\_\_21 Windload 80 mph

\_\_38 Roofload 80 PSF

\_\_22 Windload 92 mph

\_\_23 Windload 103 mph

\_\_24 Windload 115 mph

\_\_25 Windload 127 mph

### 114 Supported Floor

Supported Floor \_\_\_\_Sq. Ft.

Includes construction of structurally integrated or independently supported floors, i.e., steel decking, joists, beams, slabs, precast concrete decking with topping steel reinforcing and other related items to provide a complete structural floor. Excludes applied finishes.

\_\_01 Concrete Cast-in-Place  
\_\_02 Concrete on Steel Joists  
\_\_03 Concrete on Steel Framing  
\_\_04 Precast Concrete  
\_\_05 Wood

Floorload  
\_\_30 Under 40 PSF  
\_\_31 41-60 PSF  
\_\_32 61-80 PSF  
\_\_33 81-100 PSF  
\_\_34 101-150 PSF  
\_\_35 151-200 PSF  
\_\_36 201-250 PSF  
\_\_37 251-300 PSF  
\_\_38 Over 300 PSF

Span  
\_\_40 Under 26'  
\_\_41 26'-35'  
\_\_42 36'-45'  
\_\_43 46'-55'  
\_\_44 56'-65'  
\_\_45 66'-75'  
\_\_46 Over 76'

If more than one entry give percentage of each - nearest 10%.

### 115 stairs

Number of Risers \_\_\_\_Each

Includes interior and exterior stairs, landings, platforms, and railings.

\_\_01 Exposed  
\_\_02 Enclosed  
\_\_03  
\_\_04

\_\_10 Concrete  
\_\_11 Steel  
\_\_12 Galvanized  
\_\_13 Painted

\_\_20 Closed Riser  
\_\_21 Open Riser  
\_\_22 Steel Pan  
\_\_23 Checkered Plate

\_\_05 Exterior  
\_\_06 Interior

\_\_24 Grate

#### 116 Roof Structure

Roof Area\_\_\_\_Sq. Ft.

Includes construction of structurally integrated or independently supported roofs, i.e., precast concrete roof slabs, concrete topping, steel decking, joists, beams. Roofing is included in 142.

Framing	Deck	Span
__01 Conc Cast in Place	__20 Other	__40 Under 26'
__02	__21 Steel	__41 26'-35'
__03 Precast Hollow Core	__22 Conc Slab	__42 36'-45'
__04 Precast Concrete	__23 Wood	__43 46'-55'
__05 Wood	__24 Gypsum	__44 56'-65'
__06 Steel Joist		__45 66'-75'
__07 Steel Framing		__46 Over 76'
__08		

#### 117 Pre-Engineered Building Gross Bldg. Area Sq. Ft.

Includes steel frame, siding, roofing, insulation, doors, windows, and all other work normally furnished by the pre-engineered building sub contractor. Does not include sliding or roll-up doors.

__01 Eave height under 12'	__10 Seismic Zone 0	__32 Roofload 20 PSF
__02 Eave height 12-20'	__11 Seismic Zone 1	__33 Roofload 30 PSF
__03 Eave height over 20'	__12 Seismic Zone 2	__33 Roofload 40 PSF
__04	__13 Seismic Zone 3	__34 Roofload 50 PSF
	__14 Seismic Zone 4	__35 Roofload 60 PSF
		__36 Roofload 70 PSF
		__37 Roofload 80 PSF
	__21 Windload 80 mph	
	__22 Windload 92 mph	
	__23 Windload 103 mph	
	__24 Windload 115 mph	
	__25 Windload 127 mph	

#### 118 Vault

Gross Floor Area\_\_\_\_Sq. Ft.

Includes walls, ceiling construction and floor slab. Only includes work incurred to construct vault. See System 452 for vault door.

\_\_01 Concrete  
\_\_02 Reinforced CMU .

#### 119 Write-in System

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## ARCHITECTURAL

### 141 Roofing Roof Area

Roof Area \_\_\_\_Sq. Ft.

Includes roof curbing, roof insulation, roofing, gravel stops, gutters, and downspouts, flashing, skylights, roof-access hatches, and other related roofing items. Roof structure is included in 116.

Surface	Insulation
__10	
__11 Built-up	__21 U = 0.04
__12 Shingles	__22 U = 0.05
__13 Elast.	__23
__14 Sprayed	__24
__15 Metal Roofing Surface	

### 142 Exterior Walls

Exterior Wall Area -Sq. Ft.

Includes bearing or non-bearing walls from inside rough wall to outside finish wall, parapet walls, damp proofing, flashing, insulation waterproofing, balcony walls, and handrails. Includes exterior finishes, caulking, and painting.

Ext. Surface	Backup	Height
__01 Brick	__21 CMU	__30 Under 12'
__02 CMU	__22 Wood Studs	__31 12' – 20'
__03 Drivit	__23 Steel Studs	__32 Over 20'
__04 Metal Panels	__24 Conc Cast-in-Place	
__05 Stucco	__25 Precast Concrete	
__06 Wood	__26 Furring	
__07 Conc Cast-in-Place		
__08 Precast Concrete		

If more than one height is shown give percentage of each - nearest 10%.

### 143 Interior Walls

Interior Wall \_\_\_\_ Sq. Ft.

Includes partitions, bearing or non bearing walls, extending from floor-to-floor or floor-to-ceiling excluding finishes. Includes masonry walls, steel or wood stud walls, studs only and excludes painting, gypsum board, or other applied finish.

	Height
__01 Concrete	__21 8'
__02 Steel Studs	__22 9'
__03	__23 10'
__04 Concrete Cast-in-Place	
__05 Wood studs	

If more than one entry under height, give percentage of each - nearest 10%. Give narrative description of type and size of rooms.

### 144 Interior Finishes

Gross Building Area\_\_\_\_ Sq. Ft.

Includes finishes applied to floors, walls, ceilings, stairs and ramps such as; wall covering, resilient flooring tile, terrazzo, wood, carpeting, acoustical tile, plaster, paint, gypsum board, suspended ceiling systems, caulking, and all related trim work.

	Floor	Ceiling
__01 Gypsum Board	__11	__21 Acoustical
__02 CMU	__12 Ceramic Tile	__22 Gypsum Board
__03 Ceramic Tile	__13 Quarry Tile	__23 Plaster
__04 Wood Panels	__14 Carpet	__24 Concrete
__05 Plaster	__15 Concrete	__25 Spray on
__06 Vinyl Wall Covering	__16 Terrazzo	
	__17 Special Toppings	
	__18 VCT	

145 Doors Surface Area one Side\_\_\_\_Sq. Ft.

Includes all exterior and interior doors, frames, hardware, caulking, and painting. (See 45X for 451 Hangar Doors, 452 Vault Doors, and 453 Blast Doors.)

- \_\_01 Hollow Metal Exterior (Steel or Aluminum)
- \_\_02 Alum Entrance Store Front
- \_\_03 Folding
- \_\_04 Roll Up
- \_\_05 Overhead
- \_\_06
- \_\_07
- \_\_08 Wood Interior
- \_\_09 Hollow Metal Interior

146 Windows Surface Area One-Sides\_\_\_\_Sq. Ft.

Includes windows, glazed wall systems, glazing, caulking, and painting.

Windows	Special
__11 Double Hung	__20 Reglazing
__12 Projected	__21 Bullet Proof
__13 Casement	__22 Hardware
__14 Sliding	__23 Thermal Break
__15 Storm	
__16 Awning	
__17 Jalousie	

147 Specialties Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes chalk and tack boards, signs and plaques, flag poles, telephone enclosures, ladders, lockers, storage shelving, toilet and bath accessories, fireplaces, compartments and cubicles, movable partitions, identifying devices, protective covers, postal specialties, scales, exterior sun control devices, and wardrobe specialties, excluding special mechanical or electrical equipment.

- \_\_01 Wardrobes
- \_\_08

- |  |  |
|--|--|
| <input type="checkbox"/> _02 Jail            | <input type="checkbox"/> _09 Wire Partitions |
| <input type="checkbox"/> _03 Clean Room      | <input type="checkbox"/> _10 Metal Walkways  |
| <input type="checkbox"/> _04 Case Work       | <input type="checkbox"/> _11 X-Ray           |
| <input type="checkbox"/> _05 Dark Rooms      |  |
| <input type="checkbox"/> _06-07 Loading Dock |  |

Give estimating quantities for required Items of Significant Cost. List shown is not complete. Detailing of toilet accessories and partitions is not required. Very large items may be more suited to using a write-in system.

148 BEQ Wardrobes Number\_\_\_\_Each

Includes furnishing and installing prefabricated wardrobes and chests for BEQs.

- ☐\_01 With Chest
- ☐\_02 Without Chest

149 Write-in System

---

## DEMOLITION INTERIOR

171 Demolition Interior Gross Building Area\_\_\_\_Sq. Ft.

Includes all interior building demolition connected with new construction or alterations. Also include any work on, or in the exterior wall. Do not include complete building demolition, see System 84X.

- ☐\_01 Complete Interior Partition
- ☐\_02 Complete Interior Finishes
- ☐\_03 Complete Interior Mechanical
- ☐\_04 Complete Interior Electrical
- ☐\_05 Complete Interior of Bldg. 01 thru 04

172 Asbestos Removal Interior Total Cost \_\_\_\_Lump Sum

Includes costs for removal of asbestos from any interior areas of buildings to be rehabilitated. Includes all costs for sealing off areas, asbestos removal, monitoring, testing, disposal, change areas, disposal suits, respirators, and other related costs. (See System S44 for asbestos removal, exterior.)

- |   |                              |
|---|------------------------------|
| <input type="checkbox"/> _01 Pipe Insulation      | <input type="checkbox"/> _LF |
| <input type="checkbox"/> _02 Equipment Insulation | <input type="checkbox"/> _SF |
| <input type="checkbox"/> _03                      |                              |

173 - 175 Write-in Systems

---

## PLUMBING

### 211 Plumbing-Domestic

Number of Fixtures\_\_\_\_Each

Includes water supply and treatment, waste water disposal and treatment, plumbing equipment, fixtures and trim, and insulation, i.e., hot and cold water pipes, waste, soil and vent pipes, hot water heaters, water coolers, and floor drains.

__01 Flush Tank WC Floor Mntd.	__21 Tub	__31 Saltwater Flush
__02 Flush Tank WC Piping Wall Mntd.	__22 Shower Fiberglass	__32 Gray-water Flush
__03 Flush Valve WC Floor Mntd.	__23 Shower/Receptor	__33 Acid Resistant
__04 Flush Valve WC Wall Mntd.	__24 Shower Mult-head	__34 Fixture Rough-ins
__05 Water Heater Electric	__25 Emergency Shower	__35 Solar DHW
__06 Water Heater Steam	__26 Emerg. Eye-Wash	__50 Cast Iron
__07 Instantaneous W.H., Elec.		__51 PVC
__08 Instantaneous W.H., Steam		

Note: Refer to MIL-HDBK-1010 to determine number of fixtures for Systems 211 and 213

### 212 Domestic Hot Water Solar

Capacity\_\_\_\_MBTH

Includes piping, solar panels, supports and controls necessary for solar heated domestic hot water system. Does not include piping normal to System 211 Plumbing-Domestic. When the solar system heats both the building and domestic hot water use, System 226.

### 213 Roof Drainage

Number of Drains\_\_\_\_Each

Includes roof drains, pipes and fittings.

### 214 - 216 Write-in Systems

---

## SPACE CONDITIONING

### 221 Heating, Ventilation, and Air Conditioning

Capacity\_\_\_\_ MBTU or Tons

Includes heating, ventilating and air conditioning systems, i.e., heat generating equipment, refrigeration, air distribution, piping, controls and instrumentation, and insulation.

221	HVAC	
__01 Chilled Wtr Recip. Air Cooled	__11 VAV Single Duct	__24 Bldg. Htng Plant HW, Gas
__02 Chilled Wtr Recip. Water Cooled	__12 TAB	__25 Bldg. Htng Plant steam, Gas
__03 Chilled Wtr Centrif. Air Cooled	__13 AHU w/duct	__26 Bldg. Htng Plant Elec.
__04 Chilled Wtr Centrif. Water Cooled	__14 Computer Rm DX	__27 Base Plant Steam
__05 Direct Expansion Air Cooled	__15 Computer Rm CW	__28 Base Plant HW
__06 Heat Pump Air Cooled	__16 Roof Top	__29 Base Plant HTHW
__07 Heat Pump Water Cooled	__17 H&V Units	__30 Heat Reclaim
__08 Chilled Water Stream Absorption	__18 Pkgd. thru Wall	__31 Fixture Radiation and Unit Htrs.
__09 Chilled Water Rotary (Screw)	__19 Dual duct	__40 Power Roof Exh Fans
__10 Fan Coil Units	__20 Bldg. Htng Plant HW, Oil	__41 Inline Exh Fans
	__21 Bldg. Htng Plant Steam, Oil	__42 Inline Supply Fans
	__22 Bldg. Htng Plant Hot Air, Oil	__43 Power Roof Supply Fans
	__23 Bldg. Htng Plant Hot Air, Gas	__44 Wall Exhaust Fans

Give tonnage, refer to MILHDBK-1010 if better information is not available. If building contains partial A/C, use Systems 222 and 223 for each respective area.

### 222 Air Conditioning

Capacity\_\_\_\_Tons

Includes air conditioning systems, i.e., refrigeration, air distribution, piping, controls and instrumentation, and insulation.

__01 Chilled Wtr Recip. Air Cooled	__11 VAV Single Duct	__20 Power Roof Exh Fans
__02 Chilled Wtr Recip. Water Cooled	__12 TAB	__21 Inline Exh Fans
__03 Chilled Wtr Centrif. Air Cooled	__13 AHU w/Duct	__22 Inline Supply Fans
__04 Chilled Wtr Centrif. Water Cooled	__14 Computer Rm DX	__23 Power Roof Sup Fans
__05 Direct Expansion Air Cooled	__15 Computer Rm CW	__24 Wall Exhaust Fans
__06 Heat Pump Air Cooled	__16 Roof Top	
__07 Heat Pump Water Cooled	__17 H&V Units	
__08 Chilled Water Steam Absorption	__18 Pkgd. thru wall	
	__19 Dual Duct	



- \_\_09 Chilled Water Rotary  
(Screw)  
\_\_10 Fan Coil Units

## 223 Heating and Ventilation

Capacity\_\_ MBTH

Includes heating, ventilating systems, i.e., heating generating equipment, air distribution, piping, controls and instrumentation, and insulation. (See System 224 for ventilation only.)

- |                                     |                                |   |
|-------------------------------------|--------------------------------|---|
| __01 H&V Units<br>HW, oil           | __10 Power Roof Exh Fans       | __20 Bldg. Htng Plant                     |
| __02 Unit Heaters                   | __11 Inline Exh Fans           | __21 Bldg. Htng Plant Steam, Oil          |
| __03 Fin Tube Radiation             | __12 Inline Supply Fans        | __22 Bldg. Htng Plant Hot<br>Hot Air, Oil |
| __04 Cabinet Unit Heaters           | __13 Power Roof Supply<br>Fans | __23 Bldg. Htng Plant Hot<br>Air, Gas     |
| __05 Unit Htrs & Fin Tube Radiation | __14 Wall Exhaust Fans         | __24 Bldg. Htng Plant HW, Gas             |
| __06 Roof Top H&V                   |                                | __25 Bldg. Htng Plant Steam, Gas          |
| __07 Duct Mntd. Coils               |                                | __26 Bldg. Htng Plant Elec.               |
|                                     |                                | __27 Base Plant Steam                     |
|                                     |                                | __28 Base Plant HW                        |
|                                     |                                | __29 Base Plant HTHW                      |

## 224 Mechanical Ventilation

Fan Capacity\_\_CFM

Includes fans, supports, duct work and controls for a mechanical ventilation system. (See System 223 for combined heating and ventilation.)

- \_\_10 Power Roof Exhaust Fans  
\_\_11 In Line Exhaust Fans  
\_\_12 In Line Supply Fans  
\_\_13 Power Roof Supply Fans  
\_\_14 Wail Exhaust & Fans

## 225 Dehumidification

Capacity\_\_PPH

Includes equipment, duct work and controls for a dehumidification system. Use System 221 or 222 where dehumidification is an integral part of an air conditioning system.

- |                    |                       |
|--------------------|-----------------------|
| __01 Desiccant     | __11 Regenerative     |
| __02 Refrigeration | __12 Non-Regenerative |

## 226 Heating, Solar

Collector Area\_\_ Sq. Ft.

Includes piping, solar panels, supports, and controls necessary for a solar-heated building heating system. Does not include work normal to the building and included under Systems 221 or 223. (See Note under System 212.)

- |                            |             |
|----------------------------|-------------|
| __02 Heating               | __11 Glycol |
| __03 Heating & Domestic HW | __12 Water  |

227 Write-in System

---

## WEIGHT HANDLING EQUIPMENT

231 Bridge Cranes Capacity\_\_\_\_ Tons

Includes - Crane rails, bridge, hoists, trolleys, and electricification. Power supply at hoist area only.

__01 Span under 50'	__10 Capacity under 10 T	__21 Run under 50'
__02 Span 51-75'	__11 Capacity 10-20 T	__22 Run 50-100'
__03 Span over 75'	__12 Capacity 20-30 T	__23 Run over 100'
	__13 Capacity 30-40 T	
	__14 Capacity over 40 T	

232 Monorails Capacity\_\_\_\_Tons

Includes rail, hoist, trolley and electrification, and air supply. Power supply at hoist area only.

__01 Manual	__10 Capacity under 5 T	__21 Run under 50'
__02 Electric	__11 Capacity 5-10 T	__22 Run 50 to 100'
__03 Air Operated	__12 Capacity over 10 T	__23 Run over 100'

233 Fixed Hoist

Includes hoist, support electrification and air supply. Power supply at hoist area only.

\_\_01 Manual  
\_\_02 Electric  
\_\_03 Air Operated

234 Vehicle Lifts Capacity\_\_\_\_Tons

Includes lift, pit, electrification and air supply. Power supply at hoist area only.

\_\_10 Capacity under 5 T  
\_\_11 Capacity 5-10 T  
\_\_12 Capacity over 10 T

235 Elevators Number of Stops\_\_\_\_ Each

Passenger or freight elevators including conveyor cab, doors, controls, and rails.

__01 Electric	__11 Passenger
__02 Hydraulic	__12 Freight
__03	

236 Escalators Flights\_\_\_\_Each

Includes equipment and power supply at escalator area.

237 Conveyors

Capacity\_\_\_\_Tons/hr.

Includes equipment, foundations, controls and power supply at conveyor area only.

238 Write-in System

---

## SPECIAL MECHANICAL PIPING

241 Vacuum

Capacity \_\_\_\_CFM

Includes vacuum pump, piping, connectors, and controls (Industrial or Medical).

- \_\_01 Medical
- \_\_02 Industrial
- \_\_03

242 Oxygen

Outlets\_\_\_\_Each

Includes piping, tanks, and accessories.

243 Nitrogen

Outlets\_\_\_\_Each

Includes piping, tanks, and accessories.

244 Compressed Air

Capacity\_\_\_\_CFM

Includes air compressors, dryers, after coolers, piping, controls, valves, gauges, and filters.

- \_\_01 Low Pressure 150 below
- \_\_02
- \_\_03 High Pressure 151 up

245 Interior Steam

Capacity\_\_\_\_PPH

Includes steam generator, piping, and outlets. Does not include steam source that serves other uses. Do not use this system for steam heating.

- |                                |                          |                       |
|--------------------------------|--------------------------|-----------------------|
| __01 High Pressure             | __11 Oil Fired           | __20 Fuel Oil Storage |
| __02 Medium Pressure           | __12 Electric Fired      |                       |
| __03 Low Pressure              | __13 Prefabricated Stack |                       |
| __04                           | __14 Fire Tube           |                       |
| __05 Chemical Treatments       | __15 Water Tube          |                       |
| __06 Feed Water Equipment      | __16                     |                       |
| __07 With Condensate Return    | __17 Controls            |                       |
| __08 Without Condensate Return |                          |                       |

246, 247 Write-in Systems

---

## SPECIAL, MECHANICAL ,OTHER

251 Dust Collection

Capacity\_\_\_\_CFM

Includes equipment supports and duct work associated with an interior dust collection system.

252 Engine Exhaust Fan

Capacity\_\_\_\_CFM

Includes door exhaust ports, fans, and exhaust duct (flexible and rigid).

\_\_01 Overhead

\_\_02 Underfloor

\_\_03 Through Door

253 - 255 Write-in Systems

---

## INTERIOR FIRE PROTECTION

271 Sprinklers Gross Area Sprinkled\_\_\_\_ Sq. Ft.

Includes sprinkler pipe, fittings, valves, pumping equipment, tanks, sprinkler heads, and controls.

- |                |                                |
|----------------|--------------------------------|
| __01 Dry       | __10 Light Hazard              |
| __02 Wet       | __11 Ordinary Hazard           |
| __03 Preaction | __12 Extra Hazard              |
| __04 Deluge    | __13 -14 Includes Booster Pump |

272 AFFF (Aqueous Film Forming Foam) Area Protected\_\_\_\_Ft . Sq.

Includes equipment, piping, and controls necessary for an AFFF System. Includes storage tanks and foam when only the facility being priced is served.

- |  |  |
|--|--|
| __01 Deluge                            | __11 With 100% Back-up Storage         |
| __02 Pre-action                        | __12 Without 100% Back-up Storage      |
| __03                                   | __13 Bladder Tanks                     |
| __04 Oscillating Monitors              | __14 Standard Tank, Pump, Proportioner |
| __05 Heat Detection                    | __15                                   |
| __06 Ultraviolet/Infrared<br>Detection | __16 6% Concentration                  |
|  | __17 3% Concentration                  |

273 Carbon Dioxide Storage Capacity\_\_\_\_Pounds

Includes storage cylinders, hose reels, piping, nozzles, and controls.

- \_\_01 Hose Reel
- \_\_02 Flooding Area
- \_\_03 Flooding Total
- \_\_04

274 Halon Storage Capacity\_\_\_\_Pounds

Includes storage cylinder, controls, piping, and nozzles.

275 Fire Alarm Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes control panels, power supplies, detectors, manual alarm station, alarm devices, conduit, and wire.

- \_\_01 Manual
- \_\_02 Automatic Detectors
- \_\_03 Mechanical & Electrical
- \_\_04 Extend Existing

276, 277 Write-in Systems

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## POWER & LIGHTING

### 311 Power

Connected Load\_\_\_\_KW

Includes all interior distribution for power and special electrical systems, i.e., switchboards, transformers, motor controls, distribution switches, motor starters, feeders, branch-circuit wiring and devices, panels, and lightning protection. Exclude all interior distribution for lighting fixtures and emergency lighting, i.e., light fixtures, panels, branch circuit wiring, and devices for lighting.

- \_\_01 120/208
- \_\_02 277/480/120/208
- \_\_03 277/1480
- \_\_04 120/240
- \_\_05 Alteration to Existing
- \_\_09 Explosion Proof

### 312 Lighting

Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes all interior lighting fixtures, exit and emergency lighting, branch circuit wiring, conduit, and devices for light fixtures only. Panels are included in System 311.

- \_\_01 Incand, Fluor., HID (Standard Spec) w/Bat-Op Emerg.
- \_\_02 Special System
- \_\_03 High Ind Discharge (HID) High Bay
- \_\_04 High Ind discharge (HID) Low Bay
- \_\_05 Explosion Proof

### 313 400 HZ

Converter Capacity\_\_\_\_KW

Includes frequency changer, control system, wire, conduit, and devices to install a 400 HZ power system.

- \_\_01 Solid State
- \_\_02 MG Set

### 314 Direct Current

Converter Capacity\_\_\_\_KW

Includes rectifier battery charger, battery bank, wire, conduit, and devices to install a direct current power system.

- \_\_01 Rectifier

### 315 Uninterruptable Power Supply (UPS)

Converter Capacity\_\_\_\_ KVA

Includes battery bank, rectifier, and static inverter for solid state equipment and flywheel, motor, generator, and battery bank for rotary equipment plus all associated wiring, conduit, switches, panels, and switchgear.

- \_\_01 Static



## 316 Electrical Generators

Equipment Capacity\_\_\_\_ KW

Includes diesel, gas and gasoline engines, day tanks, valves, piping and fittings, generators, operating and synchronizing controls, transfer switches, and wiring.

- |                              |                             |               |
|------------------------------|-----------------------------|---------------|
| __01 Intermittent            | __30                        | __40          |
| __02 Continuous              | __31 120/240V, 1PH, 60HZ    | __41 600 RPM  |
| __03 Electrical              | __32 120/208V, 3PH, 60HZ    | __42 720 RPM  |
| __04 Gas                     | __33 277/480V, 3PH, 60HZ    | __43 900 RPM  |
| __05 Diesel                  | __34 347/600V, 3PH, 60HZ    | __44 1200 RPM |
| __06 Turbine                 | __35 4160V/2400V, 3PH, 60HZ | __45 1800 RPM |
| __07                         | __36 11.5/6.5KV, 3PH, 60HZ  |               |
|                              |                             |               |
| __10 Overhaul Existing Units |                             |               |
| __11 Generators GFM          |                             |               |
|                              |                             |               |
| __21 Integral Radiators      |                             |               |
| __22 Remote Radiators        |                             |               |

## 317, 318 Write-in Systems

## SPECIAL ELECTRICAL PROTECTION

## 321 Grounding

Gross Building Area\_\_\_\_Sq. Ft.

Includes cable, ground rods, clamps, and connections for grounding system.

- \_\_01 Lightning Grounding
- \_\_02 Electronic Grounding
- \_\_03 Protective Grounding

## 322 Lightning Protection

Gross Building Area\_\_\_\_Sq. Ft.

Includes base plate, lightning mast, concrete foundations, ground rods, cables, and connections for a complete building lightning protection system.

## 323 - 326 Write-in Systems

## SPECIAL ELECTRICAL/ELECTRONICS

## 331 Security Detection

Gross Bldg. Area\_\_\_\_ Sq. Ft.

Includes control panels, power supplies, detectors, alarm stations, alarm devices, wire, and conduit.

- \_\_01 Intrusion Alarm for Access Control
- \_\_02 Access Control
- \_\_03 TV Camera & Monitor
- \_\_04 Conduit

\_\_05 Conduit & wire .

If layout is not available describe area covered, where does alarm sound, etc. Also describe intended function of system.

332 Energy Monitoring and Control System

Points of Controls\_\_\_\_Each

Includes control panels, devices, wiring, and conduit.

\_\_01 Local Control

\_\_02 Remote Control

333 Computer Communication

Cable Run\_\_\_\_Lin. Ft.

Includes wiring, cable tray, and devices necessary for a complete computer communication system.

334 - 336 Write-in Systems

## COMMUNICATION

341 Telephone

Gross Bldg. Area\_\_\_\_ Sq. Ft.

Includes control panels, devices, wire, and conduit.

\_\_01 Government Owned System

\_\_02 Conduit Only

\_\_03 Conduit & Wire

342 Intercom

Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes master stations, substations, control panels, speakers, wire, and conduit. Includes System 344 Public Announcement when it is combined with the intercommunication system.

\_\_01 Theater Sound

\_\_03 Two-Way Communication Listening

\_\_04 Special System (Describe)

\_\_05 Includes PA Systems

\_\_06 Conduit

\_\_07 Conduit & Wire

\_\_08 Leased System

\_\_09 Government Owned System

343 Television

Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes antenna, booster amplifiers, circuit wiring, conduit, cameras, control consoles, and monitors.

\_\_01 Government Owned System -02 Leased Cable System

\_\_03 Conduit Only

\_\_04 Conduit and Wire

344 Public Announcement

Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes master stations, substations, control panels, speakers, wire, and conduit. See System 342 for combined intercommunication and Public Announcement systems.

\_\_01 Government Owned System

\_\_02 Conduit only

\_\_03 Conduit and Wire

345 Master Clock

Number of Outlets\_\_\_\_Each

\_\_01 Government Owned System

\_\_02 Conduit and Wire

Includes wire, conduit, and devices for a master clock system.

346, 347 Write-in Systems

4XX Special Equipment

Note: Equipment may be obtained for various funding sources and by different procurement methods. See Standard System Descriptions 4x5 - 4x6 Use: Install Government Furnished Equipment to allow for contractor cost of installation for Government Furnished Equipment; use Government furnished Equipment to allow for the cost of procuring equipment when financed from construction funds.

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## MEDICAL EQUIPMENT

411 Hospital Equipment Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes contractor furnished and installed built-in hospital equipment. Mechanical and electrical work are not included.

412 Dental Equipment Number of Chairs\_\_\_\_Each

Includes contractor furnished and installed built-in dental equipment. Mechanical and electrical work are not included.

413, 414 Write-in Systems

415 Install Government Furnished Medical Equipment

416 Government Furnished Medical Equipment

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## FOOD SERVICE EQUIPMENT

421 Food Service Equipment Pieces of Food Service Equip\_\_\_\_ Each

Includes contractor furnished and installed built-in food service equipment.

422 - 425 Write-in Systems

425 Install Government Furnished Food Service Equipment

426 Government Furnished Food Service Equipment

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## MISCELLANEOUS EQUIPMENT

431 Chapel Equipment Gross Bldg. Area\_\_\_\_Sq. Ft

Includes contractor furnished and installed built-in chapel equipment.

432 Movie Theater Equipment Gross Bldg. Area\_\_\_\_ Ft. Sq.

Includes contractor furnished and installed built-in equipment for showing films, such as projection booth windows, curtains, and projection screens. Small rear projection screens should be included under 491 Other Equipment.

433 Rifle Range Equipment Firing Lanes\_\_\_\_Each

Includes targets, guides, baffles, and bullet stops.

434 Laboratory Equipment Number Pieces\_\_\_\_Each

Includes case work, benches, testing equipment apparatus, and other equipment designated as laboratory equipment. Mechanical and electrical work not included.

435 Install Government Furnished Laboratory Equipment

436 Government Furnished Laboratory Equipment

437 Waste Disposal Equipment Capacity\_\_\_\_ PPH

Includes built-in compactors, incinerators, and shredders with installation cost. Enclosures, mechanical, and electrical work not included.

438 Write-in System

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#### SPECIAL WAREHOUSE EQUIPMENT

441 Special Warehouse Equipment Bldg. Area\_\_\_\_Sq. Ft.

Includes built-in storage racks and conveying systems, in rack special sprinkler system, dock leveler, dock door seals, and rubber bumpers with installation cost. Building mechanical and electrical work not included.

442 - 444 Write-in Systems

445 Install Government Furnished Warehouse Equipment

446 Government Furnished Warehouse Equipment

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#### SPECIAL CONSTRUCTION

451 Hanger Doors Surface Area One Side\_\_\_\_Sq. Ft.

Includes tracks, guides, operator doors, and controls. Does not include structural steel supports, concrete. Electrical work at door only.

__01 Sliding	__10 Manual
__02 Vertical Lift	__11 Power Operated

452 Vault Doors Number\_\_\_\_Each  
\_\_\_\_Size

Includes vault door and frame.

453 Blast Doors

Includes doors, frames track, operators, and controls.

Span (TNT Equivalent)	Charge Weight	Distance
__011	__11	__21
__02 3 feet	__12 0-10 Lbs.	__22 0-20 Ft.
__03 5 feet	__13	__23
__04 10 feet	__14 10-500 Lbs.	__24 20-100 Ft.
__05 15 feet	__15	__25
__06 20 feet	__16 Over 500 Lbs.	__26 Over 100 Ft.

454 Raised Floor Area of Raised Floor\_\_\_\_Sq. Ft.

Includes floor system, panel covering such as carpet, ramps, steps, closure panels, cable cutouts, and air flow panels, with installation cost. Railing to be a specialty item.

455 Radio Frequency Shielding Surface Area Shielded\_\_\_\_Sq. Ft.

Includes wall floors and ceiling panels, doors, filters, filter cabinets, wave guides, and enclosures for telephone cypher locks, and fire alarm pull box with installation cost. Mechanical and electrical services not included.

__01	__10 Spray on Metal	__20
__02 Interference	__11 Foil Backed	__21
__03	Gyp Board	__22 20 Db
__04 Tempest	__12 Wire Mesh	__23
__05	__13 Copper Sheet	__24
__06 Hemp	__14 Aluminum Sheet	__25 50 Db
	__15 Single Sheet Steel	__26
	__16 Steel Prefab Room	__27
	__17 Stainless Steel	__28 80 Db
	__18	__29
		__30 100 Db

456 Bowling Lanes Number of Lanes\_\_\_\_Each

Includes lanes and installation with pin setter, returns, and other associated equipment.

__02 new	__10 W/O Auto Pin Setter
__02 Refinished	__11 W/Auto Pin Setters

457 Paint Spray Booth Floor Area\_\_\_\_Sq. Ft.

Includes booth and equipment procured with booth. Mechanical and electrical hookup at booth area included.

458 Write-in System

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## OTHER EQUIPMENT

491 Other Miscellaneous Equipment Total Cost\_\_\_\_Lump Sum

Includes special equipment not included above. Also refer to System 147 Specialties.

492 Snow Melting Area

Protected\_\_\_\_Sq. Ft.

\_\_01 Electrical

\_\_02 Glycol

\_\_03 Geothermal

495 Install Government Furnished Miscellaneous Equipment

Describe any equipment not shown elsewhere that is purchased from construction funds. Usually this is either from equipment purchased by the government and furnished to the construction contractor, or it is furnished and installed under a separate contract. Also show, if not shown elsewhere, equipment not from construction funds for which installation costs will be required.

499 Building work not included elsewhere

Total Cost\_\_\_\_Lump Sum

Used when partial data is loaded and is desirable to combine several systems of no historical value. (Rehabilitation and Alteration projects are the ones for which this system is normally used; very seldom, if ever, is this used for new work.)

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## SUPPORTING FACILITIES

(Systems 500 through 999)

Note: 1. Show the following criteria suitable for the application of historical cost; under each applicable system heading;

- a. Size (assume if unknown) and length of utility runs. Include storm drainage requirement. Indicate valves, fire hydrants, manholes, catch basins and other significant extras. Depth of cut (when over 4 feet) and dewatering requirements must be shown.
- b. Area and assumed section for paved areas. Identify each type and section variation.
- c. Description of work required for grading, cut and borrow. Describe assumed nature of materials to be moved. If rock excavation is required, state assumptions on removal requirements (e.g., rip, blast, etc.).
- d. Indicate approximate quantities of clearing and grubbing in acres, and whether heavy, medium, or light.
- e. Describe any functional features required outside the building 5-foot line such as: sewage lift stations, wash racks and water tanks, and unsuitable soil conditions.
- f. If hazardous materials are present, state type, extent and method of disposal.
- g. See System 911 for Land Piling--Driven.



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EXTERIOR ELECTRICAL  
SUPPORTING FACILITIES

511 Electrical Distribution, Primary

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes overhead power distribution, i.e., poles, crossarms, insulators, guying, terminations, lightning protection, wire and cable, and underground distribution, i.e., excavation and backfill, concrete encased duct bank, direct burial duct, manholes, handholes, cable, terminations, stress cones, and grounding. All for primary distribution to transformer or substation.

- \_\_01 Underground
- \_\_02 Overhead

512 Electrical Distribution, Secondary

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes overhead power distribution, i.e. poles, crossarms, insulators, guying, terminations, lightning protection, wire and cable and underground distribution, i.e., excavation, backfill concrete encased and direct burial duct bank, manholes, handholes, cable terminations, stress cones, and grounding.

- \_\_01 Overhead
- \_\_02 Pad Mounted

513 Substation/Transformer

Capacity\_\_\_\_KVA

Includes overhead transformer, i.e., fuse cutouts, transformers, substation, including concrete fence, steel framing, fencing and enclosure, and pad mounted transformer; i.e., disconnect services, transformers, substation including concrete steel framing, fencing, and enclosure.

- \_\_01 Overhead
- \_\_02 Pad Mounted

514 Area Lighting

Number of Fixtures\_\_\_\_Each

Includes poles, fixtures, excavation and backfill, concrete work, wire, duct, and conduit.

- |                           |                               |
|---------------------------|-------------------------------|
| __01 Incandescent         | __11 Overhead Distribution    |
| __02 High pressure sodium | __12 Underground Distribution |
| __03 Low pressure sodium  |                               |
| __04 Mercury vapor        |                               |
| __05 Other                |                               |

515 Airfield Lighting

Length of Run\_\_\_\_Lin. Ft.

Includes excavation and backfill, duct, conduit, devices, transformer, relays, and wiring necessary to install the airfield lighting.

516 Lightning Protection

Points of Protection\_\_\_\_Each

Includes base plate, lightning mast, concrete foundations, ground rods, cables, and connections for a complete exterior lightning protection system.

517, 518 Write-in Systems

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#### EXTERIOR COMMUNICATION

521 Fire Alarm

Length of Run\_\_\_\_Lin. Ft.

Includes excavation, backfill, duct, conduit, devices, and wire necessary to install an exterior fire alarm system.

522 Security Alarm

Length of Run\_\_\_\_Lin. Ft.

Includes excavation and backfill, duct, conduit, and junction boxes. Wiring cable, devices, and their installation are not MCON funded.

523 Communication, Telephone

Length of Run\_\_\_\_Lin. Ft.

Includes excavation and backfill, duct, conduit, devices and wire necessary to install an exterior communication system.

524 Exterior EMCS

Length of Run\_\_\_\_Lin. Ft.

Includes cable, duct, conduit necessary for EMCS systems outside the building 5-foot line.

525, 526 Write-in Systems

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## EXTERIOR MECHANICAL

### 541 Heat Distribution, Overhead

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes supports, piping, insulation, and valves to install overhead steam/condensate and hot water distribution systems outside the 5-foot line.

- \_\_01 Concrete supports
- \_\_02 Timber supports

### 542 Heat Distribution, Underground

Length of Run\_\_\_\_Lin. Ft .  
\_\_\_\_Size

Includes excavation, backfill, manholes, supports, piping insulation, and valves to install underground steam/condensate and hot water distribution systems outside the 5-foot line.

- \_\_01 # of Manholes
- \_\_02 Size of Manholes

### 543 Chilled Water Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, manholes, supports, piping, insulation, and valves to install chilled water distribution systems outside the 5-foot line.

### 544 Condensate Collection (only)

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, manholes, supports, piping, and valves to install a condensate collection system.

### 545 Gas Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, piping, valves, and other miscellaneous work to install a complete gas system outside the 5-foot line.

### 546 Compressed Air Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, piping, valves, and devices to install a complete compressed air distribution system outside the 5-foot line.

### 547 Fuel Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, piping, pipe coatings, valves, and devices to install a complete fuel distribution system outside the 5-foot line.

548 Exterior Foam System

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes distribution piping, foam storage and proportioning equipment, booster pump, and emergency power.

Distribution

- |                           |                       |
|---------------------------|-----------------------|
| __01 Bladder Tanks        | __11 Above Ground     |
| __02 Standard Tanks       | __12 Below Ground     |
| Amps, Proportioner        | __13                  |
| __03 100% Back-up Storage | __14                  |
| __04 Less than 100%       | __15 6% Concentration |
| Back-up Storage           | __16 3% Concentration |
| __05 Water Booster Pump   |                       |
| __06 Emergency Generator  |                       |

549 Write-in System

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## EXTERIOR WATER DISTRIBUTION

### 551 Water Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes complete potable water distribution system, i.e., utility service connections, fire hydrants, excavation and backfill, pipe, valves, and fittings. Use when domestic and fire water System 552 are combined in one line.

- \_\_01 Fire hydrants
- \_\_02 Fittings (C.I.)
- \_\_03 Tapping sleeves & valves
- \_\_04 Valves

### 552 Fire Protection

#### Water Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes complete fire water distribution system, i.e., utility service connection fire hydrants, excavation and backfill, pipe, valves, and fittings. .

- \_\_01 Fire Hydrants
- \_\_02 Fittings (CL)
- \_\_03 Tapping Sleeves & Valves
- \_\_04 Valves

### 553 Salt Water Distribution

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes complete salt water distribution system, i.e., utility service connections, fire hydrants, excavation and backfill, pipe, valves, and fittings.

### 554 Sanitary Sewers

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes complete sanitary sewer system, i.e., utility service connections, excavation and backfill, sheeting and shoring, dewatering, pipe and fittings, manholes, cleanouts, septic disposal and process, and acid waste system outside the 5-foot line.

### 555,556 Write-in Systems

- \_\_01 Manholes
- \_\_02 Cleanouts
- \_\_03 Dewatering
- \_\_04 Sheeting

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## BULK STORAGE

### 561 Fuel Storage, Bulk

Capacity\_\_\_\_BBL

Includes tanks, foundation, coatings, fire protection, and level controls. Does not include piping or other special foundation work.

\_\_01 Underground

\_\_02 Above ground

### 562 Fuel Storage, Ready Issue

Capacity\_\_\_\_Gal

Includes excavation, backfill, gravel fill, concrete, tie downs, anks, accessories, piping at tank, coatings, and monitoring wells. (Does not include long runs of supply piping.)

\_\_01 Underground

\_\_02 Above ground

### 563 Water Storage

Capacity\_\_\_\_Gal

Includes ground level and elevated storage tanks, foundation, coatings, lighting, valves, and piping required at tanks. Does not include piling or other special foundation work

### 564 - 566 Write-in Systems

\_\_01 Ground level

\_\_02 Elevated

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## FUELING

### 571 Vehicle Fueling

Number of Outlets\_\_\_\_Each

Includes concrete island, pumps, piping to 5-foot of tank and electrical work to panel.

\_\_01 Single Product Pump

\_\_02 Dual Product Pump

### 572 Aircraft Fueling

Number of Hydrants\_\_\_\_Each

Includes hydrants, filter, supports, loading arms, piping, and canopy. System includes truck loading stand for loading of fueling trucks.

### 573 Marine Fueling

Number of Outlents\_\_\_\_Each

Includes hydrants, filters, supports, loading arms, piping, and canopy.

PUMPING

581 Fuel Pumping Station

Pump Capacity\_\_\_\_GPM  
\_\_\_\_Bldg. Size

Includes all work to install a complete fuel pumping station to the 5-foot line. Includes excavation and backfill, pit, pump, piping, valves, structure and electrical work at pump, and other miscellaneous work.

- |                   |                          |
|-------------------|--------------------------|
| __01 Above ground | __11 Reinforced concrete |
| __02 Below ground | __12 Masonry             |
|                   | __13 Pre engineered      |
|                   | __14 Other               |

582 Water Pumping Station

Pump Capacity\_\_\_\_GPM  
\_\_\_\_Size Bldg.

Includes all work to install a complete water pumping station to the 5-foot line. Includes building, pit excavation and backfill, piping, pumps, electrical, and other miscellaneous work

- |                   |                          |
|-------------------|--------------------------|
| __01 Above ground | __11 Reinforced concrete |
| __02 Below ground | __12 Masonry             |
|                   | __13 Pre-engineered      |
|                   | __14 Other               |

583 Fire Booster

Pump Capacity\_\_\_\_GPM  
\_\_\_\_Bldg. Size

Includes all work to install a complete water booster pumping station to the 5-foot line, if within a separate building. If pump is contained within the primary building, include in System 271. Includes pump, piping valves, electrical work at pump, and other miscellaneous work to install a complete fire booster pump.

- |                   |                          |
|-------------------|--------------------------|
| __01 Above ground | __11 Reinforced concrete |
| __02 Below ground | __12 Masonry             |
|                   | __13 Pre-engineered      |
|                   | __14 Other               |

584 Sewage Pump Station

Pump Capacity\_\_\_\_GPM  
\_\_\_\_Bldg. Size

Includes all work to install a complete sewage pumping station to the 5-foot line. Includes building, wet well, dry well, excavation and backfill, piping, pumps, electrical, and other miscellaneous work.

- |                   |                          |
|-------------------|--------------------------|
| __01 Above ground | __11 Reinforced concrete |
| __02 Below ground | __12 Masonry             |
|                   | __13 Pre-engineered      |

\_\_14 Other

585 Sewage Lift Station

Pump Capacity\_\_\_\_GPM  
\_\_\_\_Bldg. Size

Includes all work to install a complete sewage lift station to the 5-foot line. Includes structure, wet well, excavation, backfill, piping, pumps, electrical, and other miscellaneous work

\_\_01 Above ground

\_\_11 Reinforced concrete

\_\_02 Below ground

\_\_12 Masonry

\_\_13 Pre-engineered

\_\_14 Other

586 Write-in System

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## TREATMENT FACILITY

591 Water Treatment

Capacity (Million gal/day)\_\_\_\_MGD

Includes excavation, backfill, piping, pumps, equipment, controls, and other necessary accessories to install a complete water treatment system.

592 Domestic Sewage Treatment

Capacity (Million gal/day)\_\_\_\_MGD

Includes excavation, backfill, piping, pumps, equipment, controls, and other necessary accessories to install a complete domestic sewage treatment system.

593 Industrial Waste Treatment

Capacity (Million gal/day)\_\_\_\_MGD

Includes excavation, backfill, piping, pumps, equipment, controls, and other necessary accessories to install a complete industrial waste treatment system.

594 - 596 Write-in Systems

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## EQUIPMENT BUILDING

611 Mechanical Equipment Building

Gross Bldg. Area\_\_\_\_Sq. Ft.

Includes all work to construct a mechanical equipment building as part of a larger building project. Includes building construction, mechanical, and electrical work.

612 Electrical Equipment Building

Gross Bldg. Area \_\_\_\_Sq. Ft.

Includes all work to construct an electrical equipment building as part of a larger building project. Includes building construction, mechanical, and electrical work.

613 - 615 Write-in Systems



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## SUPPORTING STRUCTURES MISCELLANEOUS

621 Security Gate Opening Width\_\_\_\_Lin. Ft.

Includes mechanically operated gate, foundation, supports, operating mechanism controls, and electrical work at gate.

622 Guard House Gross Bldg. Area\_\_\_\_ Sq. Ft.

Includes structure, canopy, apron, curb, lighting, and mechanical and electrical work. Use for entrance gate structure as well as other guard house. This system is not intended for large structures that are a primary facility.

623 - 625 Write-in Systems

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## POLLUTION ABATEMENT STRUCTURES

641 Oil Water Separators Capacity\_\_\_\_Gal.

Includes excavation, backfill, concrete structure, miscellaneous metals, through wall piping, and other work necessary to install a complete oil water separator.

642 Electra-Static Precipitator Air Flow\_\_\_\_SCFM

Includes all work to install precipitator. Includes breeching (inlet and outlet), structural supports, control system, and ash hopper.

__01 2 Field	__11 3 Feet/Second
__02 3 Field	__12 4 Feet/Second
__03 4 Field	__13 5 Feet/Second
__04 5 Field	__14
__05 6 Field	__15 Single Stage
	__16 Two Stage

643 - 645 Write-in Systems

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## SHOP SUPPORT STRUCTURES

651 Vehicle Grease Rack Number Vehicles Racks\_\_\_\_Each

Includes all work necessary to install an exterior grease rack. Includes excavation, backfill, concrete, miscellaneous metal, and other required items.

652 Vehicle Wash Platform Number Vehicles Bays\_\_\_\_ Each

Includes all work to install a complete vehicle wash platform. Includes excavation, backfill, paving, piping, accessories, and electrical work to edge of platform. Does not include distribution piping.

653 - 656 Write-in Systems

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AIRCRAFT CLEANING FACILITY

661 Aircraft Washing Facility Paved Area\_\_\_\_Sq. Yd.

Includes paving, drainage, water supply, washing equipment controls, and other necessary items to install a complete aircraft washing facility. Do not include access paving or long utility supply runs.

662 Aircraft Rinsing Facility Paved Area\_\_\_\_Sq. Yd.

Includes paving, drainage, water-supply rinsing equipment, controls, and other necessary items to install a complete aircraft rinsing facility. Do not include access paving or long utility supply runs.

663 - 666 Write-in Systems

## SITE PREPARATION AND IMPROVEMENTS

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### ROADS

#### 711 Concrete Roads

Paved Area\_\_\_\_Sq. Yd.

Includes concrete paving, curbs, curbs and gutters, subgrade preparation, fine grading, compaction, sub-base course, base course, edge forms, concrete reinforcement, finishing, expansion and control joints, rails and barriers, wheels stops, and pavement markings.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs and Gutter
- \_\_04 Thickness (subgrade)

#### 712 Flexible Roads

Paved Area\_\_\_\_Sq. Yd.

Includes bituminous concrete paving, tack and seal coats, curbs, curbs and gutters, subgrade preparation, fine grading, compaction, sub-base course, base course, wearing course, finish course, rails and barriers, wheel stops, and pavement markings.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

#### 713 Overlay Road

Paved Area\_\_\_\_ Sq. Yd.  
\_\_\_\_Thickness

Includes flexible paving overlay of existing roads. Includes cleaning, sweeping, leveling courses, minor patching, tack coat, and pavement marking.

#### 714 Surface Treatment - Road

Paved Area\_\_\_\_Sq. Yd.

Includes bituminous surface treatment over existing pavement or base course. Includes cleaning, sweeping, minor patching, tack or prime coat, and pavement marking.

#### 715 Slurry Seal Road

Paved Area\_\_\_\_ Sq. Yd.

Includes slurry seal over existing road. Includes cleaning, sweeping, minor patching, and pavement marking.

#### 716, 717 Write-in Systems

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### PARKING

#### 721 Concrete Parking

Paved Area \_\_\_\_Yd. Sq.

Includes concrete paving, curbs, curbs and gutters, fine grading, compaction, sub-base course, base course, edge forms, concrete reinforcement, curbing, finishing, expansion and control joints, rails and barriers, wheel stops, and pavement markings.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & gutter
- \_\_04 Thickness (subgrade)

722 Flexible Parking  
Yd.

Paved Area\_\_\_\_Sq.

Includes bituminous concrete paving, tack and seal coats, curbs, curbs and gutters, fine grading, compaction, sub-base course, base course, wearing course, finish course, rails and barriers, wheel stops, and pavement markings.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & gutter
- \_\_04 Thickness (subgrade)

723 Overlay Parking  
Yd.

Paved Area\_\_\_\_Sq.

\_\_\_\_Thickness

Includes flexible paving overlay of existing parking areas. Includes cleaning, sweeping, leveling course, minor patching, tack coat, and pavement marking.

724 Surface Treatment - Parking  
Yd.

Paved Area\_\_\_\_Sq.

Includes bituminous surface treatment over existing pavement or base course. Includes cleaning, sweeping, leveling courses, minor patching, tack or prime coat, and pavement marking.

725 Slurry Seal Parking  
Yd.

Paved Area\_\_\_\_Sq.

Includes slurry seal over existing parking area. Includes cleaning, sweeping, minor patching, and pavement marking.

726, 727 Write-in Systems

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WALKS

741 Concrete Walks Paved Area\_\_\_\_Sq.  
Yd.

Includes concrete paving, base course, edge forms, concrete reinforcement, finishing, edging, and exterior steps.

742 Bituminous Walks Paved Area\_\_\_\_Sq.  
Yd.

Includes bituminous paving, base course, edging, and exterior steps.

743 Special Walks Paved Area\_\_\_\_Sq.  
Yd.

Includes brick paving, limestone paving, flagstone paving, other paving materials, base course, and exterior steps.

744 - 746 Write-in Systems

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#### AIRCRAFT PARKING CONCRETE

751 Concrete Runways Paved Area\_\_\_\_Sq.  
Yd.

Includes concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, edge forms, reinforcing, finishing, expansion and control joints, rails and barriers, wheel stops, and pavement markings when constructed for aircraft runways.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing .
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

752 Concrete Taxiways Paved Area\_\_\_\_ Sq. Yd.

Includes concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, edge forms, reinforcing, finishing, expansion and control joints, rails and barriers, wheel stops, and pavement markings when constructed for aircraft taxiing.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

753 Concrete Aprons Paved Area\_\_\_\_Sq. Yd.

Includes concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, edge forms, reinforcing, finishing, expansion and control joints, rails and barriers, wheel stops, and pavement markings when constructed for aircraft parking.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

754 Repairs Concrete

Paving Paved Area\_\_\_\_Sq. Ft.

Includes removing and replacing individual slabs, partial slab removal and replacement, spall repairs, full depth repairs, and other miscellaneous patching.

- \_\_01 Full Depth Repair
- \_\_02 Spall Repair
- \_\_03 Corner Break
- \_\_04 Other

755 Crack and Joint Repair

Length of Repair\_\_\_\_Lin. Ft.

Includes cleaning and resealing joints and cracks repairs.

757,758 Write-in Systems

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## AIRCRAFT PAVING FLEXIBLE

761 Flexible Runways  
Yd.

Paved Area\_\_\_\_Sq.

Includes bituminous concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, wearing course, finish course, rails and barriers, wheel stops, and pavement markings when constructed for aircraft runways.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

762 Flexible Taxiways  
Yd.

Paved Area\_\_\_\_Sq.

Includes bituminous concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, wearing course, finish course, rails and barriers, wheel stops, and pavement markings when constructed for aircraft taxiing.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs and Gutter
- \_\_04 Thickness (subgrade)

763 Flexible Aprons  
Yd.

Paved Area\_\_\_\_Sq.

Includes bituminous concrete paving, curbs, curbs and gutters, subgrade preparation, compaction, base course, sub-base course, wearing course, finish course, rails and barriers, wheel stops, and pavement markings when constructed for aircraft parking.

- \_\_01 Thickness (PVMt)
- \_\_02 Reinforcing
- \_\_03 Curbs & Gutter
- \_\_04 Thickness (subgrade)

764 Repairs Aircraft Flexible Paving  
Yd.

Paved Area Patched\_\_\_\_Sq.

Includes removing and replacing small area of flexible paving including sub-base course, base course, tack or prime coat, and surface material.

- \_\_01 Pull Depth Repair
- \_\_02 Surface Repair

765 Aircraft Paving Overlay  
Yd.

Paved Area\_\_\_\_Sq.

\_\_\_\_Thickness

Includes flexible overlays of aircraft paving. Includes cleaning, sweeping, tack coat, milling, minor patching, leveling courses, and pavement marking.

766 Aircraft Paving Slurry Seal  
Yd.

Paved Area\_\_\_\_ Sq.

Includes slurry seal applied over existing aircraft paving. Includes cleaning, sweeping, minor patching, tack coat, and pavement markings.

767, 768 Write-in Systems

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## INCIDENTAL PAVING WORK

### 771 Pavement Milling

Milled Area\_\_\_\_Sq. Yd.  
\_\_\_\_Depth of Milling

Includes bituminous and concrete milling with removal and/or disposal cost. Savings from recycled materials should be reflected in other systems.

### 772 - 776 Write-in Systems

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## EARTHWORK

### 811 Earthwork

Volume\_\_\_\_ Cu. Yd.

Includes site grading, site excavation, soil stabilization, soil treatment, and site clearing.

### 812 Borrow

Volume in Place\_\_\_\_Cu. Yd.

Includes all work to provide off site borrow material compacted in place.

### 813 Topsoil, Seed, Sod

Area Graded\_\_\_\_ Sq. Yd.

Includes fine grading and leveling, fertilizer and limestone application, spreading and leveling topsoil, seeding, mulching, and sodding.

### 814 Landscaping

Area Planted\_\_\_\_Sq. Yd.

Includes trees, shrubs, ground covers, and planters.

### 815 Site Irrigation

Number Sprinkler Heads\_\_\_\_Each

Includes underground piping, sprinkler heads, and controls to install a site irrigation system.

### 816 Surcharge

Fill in Surcharge\_\_\_\_ Cu. Yd.

Includes cost for obtaining, placing, monitoring, and removing to disposal area all required surcharge. If used for site fill does not include cost of compaction.

### 817 Earth Replacement

Earth Replaced\_\_\_\_Cu. Yd.  
(In place Measurement)

Includes cost of removing and disposal of existing material, obtaining, placing, compacting, and proof rolling new material for improved bearing capacity. (See 846 for Contaminated Earth Removal.)

### 818 Environmental Protection

Area Protected\_\_\_\_Acres



Includes all cost for temporary environmental protection work required due to clearing, grubbing, earthwork, or other related work. (Measure to nearest tenth of acre.)

819 Write-in System

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#### SITE IMPROVEMENTS

821 Site Improvements Area Developed \_\_\_\_Sq. Yd.

Includes retaining walls, terrace and perimeter walls, signs, site furnishings, fountains, pools and watercourse, flagpoles, and other miscellaneous related items.

822 - 825 Write-in Systems

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#### SITE PREPARATION

831 Site Dewatering (Major) Header Pipe Lin. \_\_\_\_Ft.

Includes all costs for site dewatering where the dewatering is a major item and is required for several systems. Includes furnishing, installing, operating, and removal of well pointing system.

832 - 835 Write-in Systems

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## DEMOLITION

### 841 Remove Utilities

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Sizes

Includes excavation, utility removal, capping, and backfill as required to remove existing utility lines.

### 842 Remove Paving and Slabs

Area Removed\_\_\_\_Sq. Yd.  
\_\_\_\_Thickness

Includes removal and disposal of material from both bituminous and Portland cement concrete paved areas.

### 843 Remove Structures

Structure Volume\_\_\_\_Cu. Ft.

Includes complete cost for removal of structure, foundation, and interior equipment. Removal of hazardous materials is not included. (See Systems 844 and 845.)

- \_\_01 Wood
- \_\_02 Masonry
- \_\_03 Concrete
- \_\_04 Pre-engineered
- \_\_05 Other

### 844 Remove/Dispose of Asbestos (Exterior)

Total Cost \_\_\_\_Lump Sum

Includes costs for removal of asbestos from any exterior areas including buildings to be demolished. Included are costs for sealing off areas, asbestos removal, monitoring testing disposal, change areas, disposable suits, respirators, and other related costs. (See System 172 for interior asbestos removal.)

- \_\_01 Pipe
- \_\_02 Siding
- \_\_03 Insulation
- \_\_04 Roofing

### 845 Remove/Dispose of P.C.B.

Total Cost\_\_\_\_Lump Sum

Includes costs for removing and disposing of P.C.B. contaminated areas. Included are costs for sealing off area, removal of contaminated materials, monitoring, testing change area, disposal suits, respirators, disposal, and other related cost.

### 846 Remove/Dispose of Contaminated

Earth Removed\_\_\_\_ Yd. Cu.

Includes cost of removing and disposing of existing industrial and hazardous materials.

### 847 Write-in System

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## STORM DRAINAGE

### 851 Storm Drainage Piping

Length of Run\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes utility service connections, excavation and backfill, sheeting and shoring, dewatering, pipe and fittings, manholes, catch basins, curb inlets, dry wells, ditches and culverts, retention ponds, and headwalls.

- \_\_01 Concrete
- \_\_02 Corrugated metal
- \_\_03 Other

### 852 Box and Arch Culvert

Length of Culvert\_\_\_\_Lin. Ft.  
\_\_\_\_Size

Includes excavation, backfill, forming, concrete, reinforcing steel accessories, steel arch, and bedding materials.

### 853 Drainage Facing Materials

Surface Area\_\_\_\_Sq. Yd.  
\_\_\_\_Type

Includes stone riprap, fabrics, and other materials used as facing materials for outfalls and slope protection from storm water runoff.

### 854 - 856 Write-in Systems

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## FENCING

### 861 Fencing (Perimeter)

Length of Fence\_\_\_\_Ft . Lin.  
\_\_\_\_Height

Includes footings, posts, fencing materials, gates, and turnstiles for perimeter fencing. Includes station perimeter and individual facility. Does not include fencing for fields in Systems 872, 874, 875. (See 621 for Mechanically Operated Security Gate.)

- \_\_01 Gates
- \_\_02 Barb Wire

### 862 Fencing (Alarm)

Length of Fence\_\_\_\_Lin. Ft.  
\_\_\_\_Height

Includes footing post fencing materials gate and turnstiles. When fence is part of a security alarm system.

### 863 - 865 Write-in Systems

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## RECREATION EQUIPMENT/FIELDS

871 Playground Equipment Pieces of Equipment\_\_\_\_Each

Includes swings, slides, and other items of recreation-type equipment for children's playgrounds.

872 Playing Field Equipment Pieces of Equipment\_\_\_\_Each

Includes costs for playing field equipment not shown elsewhere.

873 Tennis Courts Number of Courts\_\_\_\_Each

Includes paving, fencing, lighting, and nets for a complete tennis court.

874 Softball/Baseball Fields Number of Fields\_\_\_\_Each

Includes grading, topsoil and seeding drainage, infield, dugouts, fencing, and lighting as required for a complete softball or baseball field.

875 Football/Soccer Fields Number of Fields\_\_\_\_Each

Includes grading, topsoil and seeding, drainage, fencing, goals, benches, and lighting as required for a complete football or soccer field.

876, 877 Write-in Systems

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## HEAVY CONSTRUCTION

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### SPECIAL BUILDING FOUNDATIONS

#### 911 Land Piling - Driven

Length of Piling\_\_\_\_Lin. Ft.

Piling driven from land-based equipment used for building foundations or bulkhead tieback systems. Includes mobilization and demobilization, pile cutoff, and piling. Includes pile tests if not a separate bid item.

\*\*\*\* FOR SYSTEM LAND PILING-DRIVEN \*\*\*\*

\*\*\*\* See Under Foundations(System 111) in Building Systems \*\*\*\*

#### 912 Caissons

Number of Caissons\_\_\_\_Each

Includes excavation, concrete, and reinforcing for foundation caissons.

__01 Cased	__11 50-100 Tons
__02 Uncased	__12 101-150 Tons
__03 Other	__13 151-200 Tons
	__14 Other

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### SPECIAL BUILDING FOUNDATIONS

#### 913 Pressure Injected Footings

Number of Footings\_\_\_\_Each

Includes drilling, concrete, and reinforcing a complete pressure injected footing system.

__01 Cased	__11 50-100 Tons
__02 Uncased	__12 101-150 Tons
__03 Steel Pipe	__13 151-200 Tons
__04 Other	__14 Other

#### 914 Vibrofloation Number of

Locations\_\_\_\_Each

Includes specialized vibratory probe for penetration and extraction, and furnishing and placing sand backfill.

__01 Sand	__11 50-100 Tons
__02 Stone	__12 101-150 Tons
__03 Other	__13 151-200 Tons
	__14 Other

#### 915 Chemical Soil Stabilization

Number of Locations\_\_\_\_Each

Includes grouting equipment and specialized chemicals for injection into unstable sub-surface materials.

- ☐\_01 Cement
- ☐\_02 Lime
- ☐\_03 Flyash
- ☐\_04 Other

916 Dynamic Consolidation

Number of Locations\_\_\_\_Each

Includes equipment, consolidation effort, sand, backfill, and testing.

917 Piling -- Cast-in-Place

Length of Piling\_\_\_\_Lin. Ft.

Includes drilling, casing concrete, and reinforcing for a complete cast-in-place piling system.

- |  |   |
|--|---|
| <input type="checkbox"/> _01 Cased           | <input type="checkbox"/> _11 0-50 Tons    |
| <input type="checkbox"/> _02 Uncased         | <input type="checkbox"/> _12 51-100 Tons  |
| <input type="checkbox"/> _03 Steel Pipe      | <input type="checkbox"/> _13 101-150 Tons |
| <input type="checkbox"/> _04 Auger Cast      | <input type="checkbox"/> _14 Other        |
| <input type="checkbox"/> _05 Concrete Filled |   |
| <input type="checkbox"/> _06 Other           |   |

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## RAILROAD

921 Track Work - Railroad

Length of Track\_\_\_\_Lin. Ft.

Includes subgrade preparation, ballast, ties, rail, switches, and other accessories for a complete track system.

922 - 925 Write-in Systems

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## MARINE STRUCTURES PIERS

931 Piling - Marine

Length of Piling\_\_\_\_Lin. Ft.

Piling driven from floating equipment or land equipment used to support piers or similar waterfront structures. Includes mobilization and demobilization, pile cutoff and piling. Includes pile tests if not a separate bid item.

932 Dolphins

Number of Dolphins\_\_\_\_Each

Includes piling, cap and accessories for a complete dolphin.

933 Med Mooring

Total Cost\_\_\_\_Lump Sum

Includes chain, anchors, buoys and other accessories for a complete Med mooring.

934 Pier Deck  
Ft.

Area of Deck\_\_\_\_Sq.

Includes mobilization and demobilization, cast-in-place or precast concrete pile caps, trench sections, deck panels, manholes or transformer vaults, embedded conduit, drains, and expansion joints.

935 Fenders  
Ft.

Length of Fender\_\_\_\_Lin.

Includes mobilization and demobilization, wales, chocks, fender piles, rubber fenders, pneumatic fenders, and associated hardware.

936 Pile Clusters  
Clusters\_\_\_\_Each

Number of

Includes piles and accessories required for a complete pile cluster.

937 Marine Specialties

Total Cost\_\_\_\_Lump Sum

Includes mobilization and demobilization, bollards, cleats, brows, camels, oil booms, and other marine specialties.

938 Write-in System

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## MARINE STRUCTURES SPECIAL

941 Bulkheads/Seawalls Total Face Area\_\_\_\_Sq.  
Ft.

Includes mobilization and demobilization, sheet piles, concrete cap, relieving platform, and tieback system.

942 Erosion Protection Marine Area Covered\_\_\_\_Sq.  
Yd.

Includes mobilization and demobilization, filled bags, concrete and asphalt surfaces, ground mats, sand fences, precast structural items (dolos, tetrapads, etc.), and filter cloth.

943 Riprap (Marine) Area Covered\_\_\_\_Sq.  
Yd.

Includes bed preparation, all layers of stone, and other required work to place riprap for slope protection from wave action.

944 - 946 Write-in Systems

## MARINE REPAIRS

951 Underdeck Repair Total Cost\_\_\_\_Lump  
Sum

Includes mobilization and demobilization, repair of cracks, spalls, beam, and cap repairs.

952 Pile Repairs Marine Length Repaired\_\_\_\_Lin.  
Ft.

Includes costs for removal and replacement of existing concrete including forms and reinforcing and repair for timber piling. All for marine structures.

953 - 957 Write-in Systems

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## DREDGING

961 Mobilization/Demobilization Dredging Total Cost\_\_\_\_Lump Sum

Includes outfitting and moving equipment to and from site, dike work, spillways, pipeline laying, and other work not directly associated with actual moving of dredged materials.

962 Hydraulic Dredging Volume\_\_\_\_Cu. Yd.

Includes costs for actual moving of material by hydraulic means from in-place location to disposal area.



963 Bucket Dredging  
Yd.

Volume\_\_\_\_Cu.

Includes pumping material from scow to disposal area.

964 - 966 Write-in Systems

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#### TOWERS/ANTENNAS

971 Towers

Length\_\_\_\_Lin. Ft.

Includes foundations, ground screens, tower lighting, and accessories.

972 Antennas  
Sum

Total Cost\_\_\_\_Lump

Includes cost for installing or repairing antennas.

973 - 976 Write-in Systems

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#### TUNNEL /PIPE JACKING

981 Tunneling

Total Cost\_\_\_\_Lump Sum

Includes drilling equipment, excavation, disposal, liners, conduits, and other required work.

982 Pipe Jacking

Length Jacked\_\_\_\_Lin. Ft.

Includes jacking pits, jacking equipment, conduit, and other required items.

983 - 986 Write-in Systems

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#### HEAVY CONSTRUCTION MISCELLANEOUS

991 Bridges  
Ft.

Deck Area\_\_\_\_Sq.

Includes foundation, supports, caps, beams, deck, rails, lights, and accessories required for a complete bridge. Foundation piling not included.

992 Overpasses

Deck Area\_\_\_\_Sq. Ft.

Includes foundation, supports, caps, beams, deck, rails, lights, and accessories required for a complete bridge. Foundation piling not included.

993 - 996 Write-in Systems

999 Supporting Facilities  
Sum

Total Cost\_\_\_\_Lump

Includes all work outside the building 5-foot line. This system is not used for estimates.